

CEQA #9949

State of California
Department of Parks and Recreation
NOTICE OF EXEMPTION

TO: Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

FROM: Department of Parks and Recreation
303 Big Tree Park Road
Santa Cruz, CA 95060

PROJECT TITLE: Pilot Conditioned Taste Aversion Program **COUNTY:** Santa Cruz & San Mateo
PROJECT LOCATION: Redwood Old Growth Habitat Areas.

PARK UNIT: Big Basin Redwoods SP, Butano SP, Portola Redwoods SP and Memorial, Sam MacDonald & Pescadero County Parks.

DESCRIPTION OF THE NATURE AND PURPOSE OF PROJECT:

Disperse +/- 2000 chemically-treated eggs painted to mimic Marbled Murrelet eggs within old growth redwood habitat along existing roads and trails in Big Basin Redwoods, Portola Redwoods and Butano State Parks (phase 1) and later in Memorial, San MacDonald and Pescadero County Parks (phase 2) as part of a phased pilot program to reduce, through taste aversion methodology, predation of Marbled Murrelet nests by jays and ravens. Work will securely place eggs in trees approximately every 200 meters and includes in-depth monitoring and assessment studies aimed at reducing corvid predation upon the critically endangered Marbled Murrelet population in the Santa Cruz Mountains. As conditions change, new CEQA document(s) will be prepared as required. Additional project information can be viewed at http://www.parks.ca.gov/?page_id=982

PUBLIC AGENCY APPROVING THE PROJECT: California Department of Parks and Recreation

NAME OF DIVISION OR DISTRICT CARRYING OUT THE PROJECT: Santa Cruz District

EXEMPT STATUS:

X Categorical Exemption Class: 6 Section: 15306

REASONS WHY PROJECT IS EXEMPT:

Basic data collection, research, experimental management, and resource evaluation activities that do not result in major disturbances in an environmental resource, included as "experimental resource management" in the Department of Parks and Recreation's list of exempt activities in accordance with CCR Section 15300.4.

CONTACT: Victor Roth
Santa Cruz District

TELEPHONE: 831) 335-6385
EMAIL: vroth@parks.ca.gov

Signature on original

Chet Bardo
District Superintendent

Date

CEQA#9949

Project ID No.

40000/Proj#

PROJECT EVALUATION (PEF)

PCA No. SPC-952

PROJECT CONCEPT		
PROJECT TITLE Conditioned Taste Aversion (CTA)		PARK UNIT NAME Big Basin, Portola, Butano, San. Mateo
DISTRICT NAME Santa Cruz District		FACILITY NO. n/a
PROJECT MANAGER Portia Halbert	PHONE NO. 831.335.6386	EMAIL phalbert@parks.ca.gov
DISTRICT PROJECT MANAGER Chris Spohrer	PHONE NO. 831.335.6382	EMAIL cspoh@parks.ca.gov
PROJECT BID DATE n/a (in-house)	CONSTRUCTION START DATE March 2012	FUNDING SOURCE Oil Spill Funding (Contingency Fund)

PROJECT DESCRIPTION

Identify the scope of the project in detail, including its purpose, location, and potential impacts. If the ground is to be disturbed, describe the depth and extent of excavation. Describe the existing site conditions, including previous development. Note if work will impact or extend beyond park property. Indicate if work will be done in conjunction with, or as part of, other projects. (Use additional pages if necessary.)

See Attached Project Description.

DOCUMENTS ATTACHED

- ☒ 7.5 minute (quad) map of project area (Required)
- ☒ Site Map (Required - Scale should show relationship to existing buildings, roads, landscape features, etc.)
- ☐ Graphics (Specify - photos, diagrams, drawings, cross-sections, etc.):
- ☐ Other (Specify):

REGULATORY REQUIREMENTS

IS AN APPLICATION, PERMIT, OR CONSULTATION REQUIRED?

- Coastal Development Permit
- DFG Stream Alteration Permit
- State & Federal Endangered Species Consultation
- Corps of Engineers 404 Permit
- RWQCB or NPDES Permit
- DPR Right to Enter or Temporary Use Permit
- PRC 5024 Review
- Americans with Disabilities Act
- Stormwater Management Plan
- Encroachment Permit (Specify Agency):
- Other (Specify): San Mateo County Parks Approval

YES	MAYBE	NO	CONTACT
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COMMENTS:

Marbled Murrelet Conditioned Taste Aversion Project Description

This project is designed to restore Marbled Murrelets using methods developed at Redwood National and State Parks in northern California. These actions may be implemented in Big Basin Redwoods State Park, Portola Redwoods State Park, Butano State Park, Memorial County Park, Sam MacDonal County Park, and Pescadero Creek County Park. The actions to be implemented are described in detail below, and an assessment of their environmental effects is provided.

Nest predation by corvids, especially ravens and jays, is thought to be one of the primary causes for low productivity among Marbled Murrelets in California. Hebert and Golightly (2007) documented murrelet nest depredation by Steller's Jays and Common Ravens and recommended that steps be taken "to minimize anthropogenic activities that may increase local corvid densities or disturb murrelets during the early incubation period." Corvids are the predators having the greatest impact to Marbled Murrelets (USFWS 2009).

Recently, new research has revealed a restoration action that may provide benefits to Marbled Murrelets and may enhance existing corvid management efforts. We are calling this action Conditioned Taste Aversion (CTA). This measure is essentially a new form of corvid management to protect murrelets and offer the promise of additional reductions in jay predation of murrelet nests. Increasing murrelet productivity in the short-run is vital to sustaining the species (Peery and Henry 2010). Studies and experiments regarding these methods are currently on-going.

Under this proposal Conditioned Taste Aversion (CTA) will be added to the existing Marbled Murrelet Restoration Project, which is described in the Background Information Section below. CTA will provide an additional way to address predation risk by jays to murrelet eggs.

CTA involves training jays to avoid Marbled Murrelet eggs by exposing them to painted chicken eggs (colored to mimic murrelet eggs) that contain carbachol shortly before the start of, and during, the murrelet incubation period. Carbachol is a drug that mimics the action of the neurotransmitter acetylcholine. It causes jays and many other species to experience temporary discomfort, nausea, and possibly vomiting when ingested. In humans, carbachol is used primarily to treat glaucoma (in eye drops) or used in eye surgery. In horses, it is given to treat colic. Treated eggs would be secured with zip-ties to branches >3 meters above the ground. Eggs would be placed in forested areas surrounding the campgrounds and picnic sites and up to 2 km away in the above mentioned parks. The density of eggs placed in the forest would vary depending on jay densities, with average egg densities anticipated to be <2 eggs/ha (see attached maps for treatment areas). This density will involve placing eggs approximately every 200 m along the roads and trails within the buffer indicated on the maps.

Jays that ingest carbachol-treated eggs are expected to associate the unpleasant experience with murrelet eggs such that they modify their behavior and avoid ingesting actual murrelet eggs they encounter in the future.

Recent cage and field studies suggest that it may be possible to safely train a large number of jays in the wild to avoid murrelet eggs (Gabriel and Golightly 2011). Gabriel and Golightly (2011) observed subdued activity, beak wiping, and vomiting in jays ingesting carbachol-treated eggs but did not observe any lasting ill effects. The advantage of this CTA approach is that it is a non-lethal predator management action that has been successfully tested on other predator species (Conover 1990; Avery et al. 1995, Cox et al. 2004).

CTA would be implemented in a phased approach, with initial experimental applications for YEAR 1 to Butano and Portola State Parks (all in San Mateo County), and then in YEAR 2 Memorial, Sam McDonald, and Pescadero Creek County Parks (also in San Mateo County) and Big Basin State Park (San Mateo and Santa Cruz Counties). This project will continue on a yearly basis, alternating between these parks. If effectiveness monitoring (see *Performance Criteria and Monitoring* section below) indicates success and funding is available, CTA would continue through ~2032 based on funding availability. As conditions change or significantly new information is obtained a new CEQA document will be prepared and submitted.

For all Murrelet Restoration Project measures implemented, corvids and Marbled Murrelets will be monitored (see *Performance Criteria and Monitoring* section below) for the duration of the project and the associated data will be used to inform management decisions and implementation of further project components.

Affected Environment

This project would be located in one or more of the campgrounds and surrounding areas described above. These are areas comprised of old growth and large second growth redwood and Douglas fir forests.

Environmental Consequences (Beneficial and Adverse)

This project is intended to improve Marbled Murrelet nest success through a decrease in predation caused by jays and ravens. Any improvement in nest success will help forestall, and potentially help reverse, the decline of the Marbled Murrelet species in California. Sustaining a Marbled Murrelet population through the next few decades will enable future Marbled Murrelets to access increasing amounts of protected old growth forest and second growth forest as they mature into suitable nesting habitat.

In toxic doses, carbachol stimulates all bodily secretions, produces severe gastrointestinal colic, diarrhea and shortness of breath, increases then slows heart rate, and can cause respiratory paralysis or heart block. A recent study found that jays ingesting egg contents treated with 24 mg or 32 mg of carbachol may vomit or experience gastrointestinal discomfort resulting in subdued activity up to several hours, and beak wiping which may last from several minutes, up to an hour (Gabriel and Golightly 2011). Based on an average weight of 115 g for jays, ingestion of the entire 24 mg treated egg would result in an available dose of 209 mg/kg. Most of the jays in the study consumed only a fraction of the available dose. Gabriel and Golightly (2011) reported that there were no jay mortalities at either dose, no observable lasting adverse effects, and all

experimentally-dosed jays were later released back into the wild and subsequently re-sighted alive. The toxicity of exposure of birds to carbachol-treated eggs would vary with the dose of carbachol ingested as well as the frequency and duration of the exposure. However, with this aversive 24 mg dose, conditioning is expected such that birds will avoid ingestion of additional treated eggs, limiting their exposure. Therefore, no significant adverse effects are expected for jays ingesting carbachol-treated eggs. Conditioned jays that will no longer ingest murrelet eggs are unlikely to suffer from food deprivation as bird eggs are not a major food source for jays and murrelet eggs are themselves, relatively rare among forest birds.

Other avian egg predators that may be exposed to carbachol-treated eggs include ravens and possibly crows. Gray Jays occur in coastal coniferous forests along the coast from Alaska to Mendocino County, California and are uncommon in Redwood National and State Parks near the southern extent of their range. They are smaller than Steller's Jays (75 g vs. 115 g) so ingestion of an entire carbachol-treated egg would result in a larger dose. However, the dose received by a Gray Jay would be within the range of doses safe for Steller's Jays as determined in Gabriel and Golightly (2011). Therefore, the Trustees anticipate that even if Gray Jays ingested the contents of treated eggs, there would be no significant adverse effect to individuals or regional populations. Ravens and crows are larger than Steller's Jays so they would effectively receive a smaller dose. It is not certain that this dose would induce aversion. If ravens and crows that ingest carbachol-treated eggs are successfully conditioned to avoid murrelet eggs, they are unlikely to suffer from food deprivation because they are omnivores with diverse diets like jays. Murrelet eggs are likely to make up a very small portion of their diet. Parks anticipate that any adverse effects to other corvids are less than significant.

In a pilot experiment, 214 carbachol-treated eggs were placed in a systematic grid covering 428 ha (Gabriel and Golightly 2011). In addition to corvids, black bears (*Ursus americanus*) and small mammals were suspected of predated the eggs in the pilot study. Given the large size of bears, relative to the dose of carbachol, no adverse effects to bears is expected from ingestion of treated eggs and therefore effects are expected to be less than significant. Additionally, bears are not found in the Santa Cruz mountains.

Raccoons (*Procyon lotor*), Virginia opossums (*Didelphis virginiana*), ringtail cats (*Basilemys astutus*), weasels and mink (*Mustela spp.*), fishers (*Martes pennanti*), pine martens (*M. americana*), spotted skunks (*Spilogale gracilis*), and to a lesser extent striped skunks (*Mephitis mephitis*) potentially could encounter and opportunistically ingest treated eggs. The safe and lethal doses are unknown. Raccoons and opossums are common, occurring over a widespread geographical area. Given the limited geographical area in which eggs will be placed and low densities of treated eggs, the number of animals potentially exposed will be small relative to the local and regional population levels. Any adverse impacts are expected to be less than significant for raccoons and opossums.

Dogs, cats, and ferrets are carnivores that respond to known emetics (Andrews and Horn 2006), and it is expected that ringtails, weasels, mink, fishers, pine martens, and skunks also have the ability to vomit. Based on a cited report of nausea and vomiting in dogs dosed with 3 mg/kg carbachol (Naunyn-Schmiedeberg's Archiv fuer Experimentelle Pathologie und Pharmacologie. Vol. 164, Pg. 346, 1932), it is anticipated that ingestion of treated egg contents would cause

gastrointestinal stimulation resulting in nausea or vomiting. As vomiting purges the body of toxic substances and reduces exposure, it is unlikely that a lethal dose would be ingested in these wild carnivores. If ingestion of carbachol-treated eggs results in successful conditioning to avoid murrelet eggs, it is unlikely that these carnivores would suffer from food deprivation because eggs are a minor portion of the diet and they are highly unlikely to encounter murrelet nests. Given the limited geographical area in which eggs will be placed and low densities of treated eggs, the number of animals potentially exposed will be small relative to the regional population levels for these predatory mammals. Therefore, any adverse impacts are expected to be less than significant.

Rodents, such as rats (*Rattus* spp.), woodrats (*Neotoma* spp.), deer mice (*Peromyscus* spp.), house mice (*Mus musculus*), Western gray squirrel (*Sciurus griseus*), and chipmunks (*Tamias* spp.) also may encounter and ingest treated eggs. The lethal dose is 40 mg/kg for rats (Journal of Pharmacology and Experimental Therapeutics. Vol. 58, Pg. 337, 1936) and 5 mg/kg for mice (The Merck Index: Encyclopedia of Chemicals, Drugs and Biologicals S. Budavari (ed)., Rahway, NJ, 1989). Mice and rats, and presumably squirrels and chipmunks, are physically unable to rid themselves of toxic substances by vomiting (Andrews and Horn 2006). Partial consumption of treated egg contents for these small rodent species could result in a lethal dose. These rodent species are common in forested habitats. Given the relatively small geographical area in which treated eggs will be available, limited duration of potential egg exposure, the low density of treated eggs, and the limited number of individuals potentially exposed to eggs relative to the rodent population levels, any adverse effects to rodents are expected to be minor, short-term, and less than significant to the local and regional populations.

The minimum lethal human dose for carbachol has not been delineated. However, given that treated eggs will be secured with zip-ties to branches >3 meters above the ground, at very low densities (<2 eggs/ha), and non-depredated eggs will be removed at the end of the murrelet incubation period, it is highly unlikely that humans will encounter, much less ingest, treated eggs.

Probability of Success

The link between corvid numbers and actual nest predation is difficult to measure directly because Marbled Murrelet nests are difficult to find and study. However, experiments with artificial eggs have found that predation pressure declines with decreasing corvid density (Raphael et al. 2002).

The success of CTA has been demonstrated in a cage study and a pilot field study in Zone 4 (Gabriel and Golightly 2011). It is not known whether a larger-scale implementation exposing jays to treated mimic eggs will result in concomitant increases in murrelet productivity. Even if CTA is completely successful, if jay densities are high enough, predation pressure on chicks may offset increases in egg survival. There is some uncertainty as to the duration of benefits for this project. Specifically, the duration of conditioning in wild jays is not fully understood. Given these unknowns and uncertainties, State Parks intends to conduct pilot evaluations in a few selected areas prior to full-scale implementation.

Performance Criteria and Monitoring

Because Marbled Murrelet nests are difficult to find, and nest predation difficult to study directly, the success of the project will be monitored through Marbled Murrelet surveys, corvid surveys, and annual progress reports from the land managers on the implementation of the corvid management tasks. A strong emphasis will be put on post-breeding at-sea surveys for murrelets, as these surveys are the easiest way to monitor murrelets, including juveniles and determine reproductive rates. Monitoring for potential non-target species effects, for example installing cameras focused on mimic eggs to identify predators, will be included as part of conditioned taste aversion implementation.

Marbled Murrelet Background Information

Background

The Marbled Murrelet is a small seabird in the alcid family found along the Pacific Coast from Alaska to northern California. At sea, it feeds by diving for small fish in near-shore waters, typically within 5 km of the coastline. Unlike most alcids, the Marbled Murrelet nests up to 50 km (most within 30 km) inland in late-successional and old-growth coniferous forests. In California, it nests almost exclusively in redwoods (*Sequoia sempervirens*) 200 years old and older (Nelson 1997). Like most alcids, the Marbled Murrelet is a long-lived slow-reproducing species, laying only one egg per year.

Conservation Issues

The Marbled Murrelet is listed as a “threatened” species under the federal Endangered Species Act and as “endangered” under state law. The North

American Waterbird Conservation Plan considers it a species of “high concern,” while the National Audubon Society has placed it on its “yellow list” for species that are declining or rare. In California (Figure 8), fewer than 5,000 birds nest in Humboldt and Del Norte Counties (Marbled Murrelet Conservation Zone 4), while a much smaller population of less than 500 birds nests in the Santa Cruz Mountains south of the San Francisco Bay area (Zone 6). There are even fewer



Figure 8: Marbled Murrelet conservation zones

murrelets in Zone 5 (Mendocino, Sonoma, and Marin Counties). The Northwest Forest Plan estimated the population for all of Zone 5 at 48 birds, most of which presumably occur from the Gualala River north (USDA and USDI 1994). A DNA study has shown that the Santa Cruz Mountain population is genetically distinct from the others (Hall et al. 2009).

The population of Marbled Murrelets in California is declining. The primary factors affecting murrelet populations throughout California are decreased availability of suitable nesting habitat (old-growth forest) and predation by corvids (USFWS 2009). Nest predation risk appears to be related to proximity to humans (recreation sites and housing), proximity and type of forest edge to the nest, and abundance of avian predators (USFWS 2009). As a consequence of dramatic increases in corvid abundance (i.e., Stellar's Jays and Common Ravens) in California, and especially in the Santa Cruz mountains, high corvid densities are observed around campgrounds and picnic areas located in or adjacent to murrelet nesting habitat (Peery and Henry 2010). The most recent 5-year review of the species found that the Santa Cruz Mountain population is experiencing near-zero reproduction and declining at 15% per year, consistent with the annual adult mortality rate (USFWS 2009).

Restoration and Background Information

State Parks is currently involved in the management of corvid populations to reduce their numbers around campgrounds in prime murrelet breeding areas to reduce predation on murrelet nests (eggs and chicks).

The current efforts are designed to increase Marbled Murrelet productivity by managing corvid populations in certain campgrounds where breeding murrelets, human trash and food scraps, and corvids coincide. Reducing human food subsidies is critical to reducing corvid predation pressure on murrelet nests, as these subsidies are a root cause of high corvid abundances. Such projects are already underway in the Santa Cruz Mountains (at Big Basin Redwoods, Butano, and Portola State Parks, and at Memorial and Pescadero Creek County Parks).

Current corvid management efforts include:

- education of campers and visitors regarding the effects of human food waste;
- “soft” enforcement of food storage regulations to reduce human food waste;
- improvements to garbage receptacles;
- improvements to food storage lockers; and
- removal of ravens and/or their nests.

While education efforts and improvements to garbage infrastructure have resulted in substantial reductions in relative densities of jays in the Santa Cruz mountain parks since 2003, jay densities are still over 7 times higher than in similar habitats without food subsidies (Suddjian 2010). In Redwood National and State Parks jay numbers in campground areas were 5 times higher than in control areas (Bensen 2008). State Parks believes additional measures to decrease predation risk to murrelet nests is warranted to restore murrelets. CTA is just such a measure.

The educational components of the project attempt to teach the public about imbalances in the ecosystem that may be caused as different species respond positively and negatively to human

actions. Specifically, the public learn how seemingly innocuous interactions with wildlife (e.g., feeding jays at a picnic table) or poor housekeeping at a campsite (e.g., leaving a bag of chips on a table) sustains corvid populations at unnaturally high levels, which in turn can have immediate and long-term negative consequences for the Marbled Murrelet. To the extent that humans adjust their behavior favorably to these messages, there is a corresponding benefit to the environment.

Corvid management measures to reduce human food subsidies to corvids (e.g., education, soft enforcement, improvements to garbage protection and food storage, and installation of food waste receptacles at water spigots) as well as on-going raven removal have minimal, negative direct impacts on campers or on jays, ravens, and possibly other animals that scavenge food waste at campgrounds. Reducing human food subsidies in and around campgrounds and picnic areas is intended to displace those corvids that have become dependent on human-food subsidies.

CITATIONS:

- American Veterinary Medical Association [AVMA] Guidelines on Euthanasia [June 2007].
http://www.avma.org/issues/animal_welfare/euthanasia.pdf
- Andrews, P.L.R. and C.C. Horn. 2006. Signals for nausea and emesis: Implications for models of upper gastrointestinal diseases. *Autonomic Neuroscience: Basic and Clinical* 125: 100 – 115.
- Avery, M.L., M.A. Pavelka, D.L. Bergman, D.G. Decker, C.E. Knittle, and G.M. Linz. 1995. Aversive conditioning to reduce raven predation on California Least Tern eggs. *Colonial Waterbirds* 18:131–138.
- Bensen, K. 2008. Corvid monitoring, corvid management, trail and backcountry management plan implementation, 2007 progress report. National Park Service and Department of Parks and Recreation State of California. 13 pp.
- Conover, M.R. 1990. Reducing mammalian predation on eggs by using a conditioned taste aversion to deceive predators. *Journal Wildlife Management* 54: 360–365.
- Cox, R., S.E. Baker, D.W. Macdonald and M. Berdoy. 2004. Protecting egg prey from Carrion Crows: the potential of aversive conditioning. *Applied Animal Behaviour Science* 87:325–342.
- Gabriel, P.O. and R.T. Golightly. 2011. Experimental assessment of taste aversion conditioning on Steller's Jays to provide short-term improvement of nest survival of Marbled Murrelets in northern California. Report to National Park Service and Command, Luckenbach, and Cosco Busan Trustee Councils.
- Hall, L.A., P.J. Palsbøll, S.R. Beissinger, J. Harvey, M. Bérubé, M.G. Raphael, S.K. Nelson, R.T. Golightly, L.A. McFarlane, S.H. Newman, and M.Z. Peery. 2009. Characterizing dispersal patterns in a threatened seabird with limited genetic structure. *Molecular Ecology* 18: 5074–5085.
- Hebert, P.N. and R.T. Golightly. 2007. Observations of predation by corvids at a Marbled Murrelet nest. *Journal of Field Ornithology* 78: 221-224.
- Nelson, S.K. 1997. Marbled Murrelet (*Brachyramphus marmoratus*). In *The Birds of North America*, No. 313 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA and The American Ornithologists' Union, Washington, D.C.
- Peery, M.Z. and R.W. Henry. 2010. Recovering marbled murrelets via corvid management: A population viability analysis approach. *Biological Conservation* 143:2414–2424.
- Raphael, M.G., D.E. Mack, J.M. Marzluff, and J.M. Luginbuhl. 2002. Effects of forest fragmentation on populations of the marbled murrelet. *Studies in Avian Biology* 25: 221-235.
- Suddjian, D.L. 2010. *Summary of 2009 corvid monitoring surveys in the Santa Cruz mountains*. Report prepared for the Command Oil Spill Trustee Council.
- USFWS. 2009. *Marbled Murrelet (Brachyramphus marmoratus) 5 –Year Review*. USFWS, Washington Fish and Wildlife Office. Lacey, WA.

Project ID No. _____

PROJECT EVALUATION (PEF)

PCA No. _____

DEPARTMENT POLICY COMPLIANCE

HAS A GENERAL PLAN BEEN APPROVED FOR THE UNIT?

YES NO

If YES, is the project consistent with the GP?

If NO, what is the project justification?

Is it a temporary facility? (No permanent resource commitment)

Health and Safety?

Is it a Resource Management Project?

Is it repairing, replacing, or rehabilitating an existing facility?

IS THE PROJECT WITHIN A CLASSIFIED SUBUNIT?

Natural Preserve

Cultural Preserve

State Wilderness

IS THE PROJECT CONSISTENT WITH THE DEPARTMENT'S CULTURAL
RESOURCE MANAGEMENT DIRECTIVES?IS THE PROJECT CONSISTENT WITH THE DEPARTMENT'S OPERATIONS
MANUAL CHAPTER 0300?

COMMENTS:

SUPERINTENDENT PROJECT CONCEPT APPROVAL OR DESIGNEE

TITLE

DATE

*Shula Branon**Mtns Sector Supt. (Acting) 2/2/12***RESOURCES**Explain all 'Yes' or 'Maybe' answers in the "Evaluation and Comments" section
(reference by letter and number). Attach additional pages, if necessary.

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A. EARTH – WILL THE PROJECT:

1. Create unstable soil or geologic conditions?
2. Adversely affect topographic features?
3. Adversely affect any unusual or significant geologic features?
4. Increase wind or water erosion?
5. Adversely affect sand deposition or erosion of a sand beach?
6. Expose people, property, or facilities to geologic hazards or hazardous waste?
7. Adversely affect any paleontological resource?

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B. AIR – WILL THE PROJECT:

1. Adversely affect general air quality or climatic patterns?
2. Introduce airborne pollutants that may affect plant or animal vigor or viability?
3. Increase levels of dust or smoke?
4. Adversely affect visibility?

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C. WATER – WILL THE PROJECT:

1. Change or adversely affect movement in marine or fresh waters?
2. Change or adversely affect drainage patterns or sediment transportation rates?
3. Adversely affect the quantity or quality of groundwater?
4. Adversely affect the quantity or quality of surface waters?
5. Expose people or property to flood waters?
6. Adversely affect existing or potential aquatic habitat(s)?

PROJECT EVALUATION (PEF)

YES	MAYBE	NO
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D. PLANT LIFE – WILL THE PROJECT:

1. Adversely affect any native plant community?
2. Adversely affect any unique, rare, endangered, or protected plant species?
3. Introduce a new species of plant to the area?
4. Adversely affect agricultural production?
5. Adversely affect the vigor or structure of any tree?
6. Encourage the growth or spread of alien (non-native) species?
7. Interfere with established fire management plans or practices?

YES	MAYBE	NO
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E. ANIMAL LIFE – WILL THE PROJECT:

1. Adversely affect any native or naturalized animal population?
2. Adversely affect any unusual, rare, endangered, or protected species?
3. Adversely affect any animal habitat?
4. Introduce or encourage the proliferation of any non-native species?

YES	MAYBE	NO
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F. CULTURAL RESOURCES – WILL THE PROJECT:

1. Adversely affect a prehistoric or historic archeological site?
2. Adversely affect a prehistoric or historic building, structure, or object?
3. Cause an adverse physical or aesthetic effect on an eligible or contributing building, structure, object, or cultural landscape?
4. Diminish the informational or research potential of a cultural resource?
5. Increase the potential for vandalism or looting?
6. Disturb any human remains?
7. Restrict access to a sacred site or inhibit the traditional religious practice of a Native American community?

YES	MAYBE	NO
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

G. AESTHETIC RESOURCES – WILL THE PROJECT:

1. Adversely affect a scenic vista or view?
2. Significantly increase noise levels?
3. Adversely affect the quality of the scenic resources in the immediate area or park-wide?
4. Create a visually offensive site?
5. Be incompatible with the park design established for this unit or diminish the intended sense of "a special park quality" for the visitor?

YES	MAYBE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

H. RECREATIONAL RESOURCES – WILL THE PROJECT:

1. Be in a public use area?
2. Have an adverse effect on the quality of the intended visitor experience?
3. Have an adverse effect on the quality or quantity of existing or future recreational opportunities or facilities?
4. Have an adverse effect on the accessibility of recreational facilities (e.g., ADA requirements)?

Project ID No. _____

PROJECT EVALUATION (PEF)

PCA No. _____

EVALUATION AND COMMENTS

E1. This project will result in some corvids (jays, ravens, and crows) ingesting an emetic in a mimic marbled murrelet egg for the purposes of causing aversion to murrelet eggs. When ingested the mimic eggs will cause temporary discomfort, nausea and possibly vomiting for a short time. Jays that ingest the mimic eggs are expected to associate the unpleasant experience with murrelet eggs such that they modify their behavior and avoid ingesting actual murrelet eggs they encounter in the future. See Attached Project Description.

H1. The mimic eggs will be placed throughout the parks, within campgrounds and along roads and trails. In areas like the campground and headquarters the eggs will be positioned high off the ground to reduce the likelihood that they will be discovered or seen by the public.

ENVIRONMENTAL REVIEW*To Be Completed by Qualified Specialist(s) ONLY.**Attach additional reviews or continuation pages, as necessary.***ARCHEOLOGIST COMMENTS**☒ No Significant Impact ☐ Conditions, Mitigation ☐ Potential Impact

No archaeological resources involved - further 5024 review not necessary

SIGNATURE

PRINTED NAME

TITLE

DATE

HISTORIAN COMMENTS☒ No Significant Impact ☐ Conditions, Mitigation ☐ Potential ImpactNo Historic structures, features or events involved.
Further 5024 review not necessary.

SIGNATURE

PRINTED NAME

TITLE

DATE

RESOURCE ECOLOGIST COMMENTS☒ No Significant Impact ☐ Conditions, Mitigation ☐ Potential Impact

SIGNATURE

PRINTED NAME

TITLE

DATE

MAINTENANCE CHIEF/SUPERVISOR COMMENTS☒ No Significant Impact ☐ Conditions, Mitigation ☐ Potential Impact

SIGNATURE

PRINTED NAME

TITLE

DATE

OTHER SPECIALIST COMMENTS☐ No Significant Impact ☐ Conditions, Mitigation ☐ Potential Impact

SIGNATURE

PRINTED NAME

TITLE

DATE

Project ID No. _____

PROJECT EVALUATION (PEF)

PCA No. _____

OTHER COMMENTS

☐ No Significant Impact ☐ Conditions, Mitigation ☐ Potential Impact

SIGNATURE

PRINTED NAME

TITLE

DATE

ENVIRONMENTAL COORDINATOR REVIEW

YES MAYBE NO

☐ ☒ ☐☐ ☒ ☐☐ ☐ ☒☐ ☐ ☒☐ ☐ ☒☐ ☐ ☒**CUMULATIVE IMPACTS**

1. Will the project be conducted in conjunction with or at the same time as other projects at the park?
2. Will the project be part of a series of inter-related projects?
3. Are there any other projects that must be completed for any part of this project to become operational?
4. Are there any other projects (including deferred maintenance) that have been completed or any probable future projects that could contribute to the cumulative impacts of this project?
5. Are any of the projects that relate to the proposed work outside the General Plan?

COMMENTS:

RECOMMENDATION:

- ☐ Not a project for the purposes of CEQA compliance.
- ☒ The project is exempt. A Notice of Exemption should be filed.
- ☐ A Negative Declaration should be prepared.
- ☐ A Mitigated Negative Declaration should be prepared.
- ☐ An EIR should be prepared.

SIGNATURE

PRINTED NAME

Victor S. Roth
 TITLE
Dist. Services Manager

VICTOR S. ROTH
 DATE
1/21/2012

DISTRICT SUPERINTENDENT REVIEW

COMMENTS:

I acknowledge any constraints placed on the project as a result of the specialists' comments above and recommend the project proceed.

DISTRICT SUPERINTENDENT APPROVAL SIGNATURE

TITLE

DATE

[Signature]

DISTRICT SUPT.

1/31/2012

Order Number

Customer
Number

Section 1. Chemical Product and Company Identification

Common Name	Carbachol	Catalog #	212385
Supplier	Calbiochem-Novabiochem Corp. 10394 Pacific Center Court San Diego, CA 92121 (858)450-5558/(800)854-3417 FAX: (858)453-3552	In Case of Emergency	Call Chemtrec® (800)424-9300 (within U.S.A.) (703)527-3887 (outside U.S.A.)
Synonym	CARBACHOL; CARBACHOL CHLORIDE; CARBACHOLIN; CARBACHOLINE; CARBACHOLINE CHLORIDE; CARBACHOLINA; CARBAMIC ACID, ESTER WITH CHOLINE CHLORIDE; CARBAMINOCHOLINE CHLORIDE; CARBAMINOYLCHOLINE CHLORIDE; CARBAMIOTIN; CARBAMOYLCHOLINE CHLORIDE; GAMMA-CARBAMOYL CHOLINE CHLORIDE; CARBAMOYLCHOLINE-HYDROCHLORIDE; CARBAMYLCHOLINE CHLORIDE; CARBOCHOL; CARBOCHOLIN; CARBOCHOLINE; CARBYL; CARCHOLIN; CHOLINE CARBAMATE CHLORIDE; CHOLINE, CHLORIDE CARBAMATE(ESTER); CHOLINE CHLORIDE, CARBAMOYL-; CHOLINE CHLORINE CARBAMATE; COL ETYL; DORYL; DORYL (P H A R M A C E U T I C A L) ; E T H A N A M I N I U M , 2-(AMINOCARBONYL)OXY-N,N,N-TRIMETHYL-, CHLORIDE; (2-HYDROXYETHYL)TRIMETHYL AMMONIUM CHLORIDE CARBAMATE; ISOPTO CARBACHOL; JESTRYL; LENTIN; LENTINE (FRENCH); MIOSTAT; MISTURA C; MORYL; P.V. CARBACHOL; TL 457; VASOPERIF		

Section 2. Composition, Information on Ingredients

Name	CAS #	Exposure Limits
1) Carbachol	51-83-2	Not available.

Section 3. Hazards Identification

Physical State and Appearance	Solid. (Crystalline solid.)
Emergency Overview	DANGER! MAY BE FATAL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE DAMAGE TO THE FOLLOWING ORGANS: HEART, GASTROINTESTINAL TRACT, RESPIRATORY TRACT. Do not get in eyes, on skin or on clothing. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid breathing dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
Routes of Entry	Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.
Potential Acute Health Effects	Eyes Hazardous in case of eye contact (irritant). Skin Extremely hazardous in case of skin contact (permeator). Hazardous in case of skin contact (irritant). Severe over-exposure can result in death. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Inhalation Extremely hazardous in case of inhalation. May be fatal if inhaled. Ingestion Extremely hazardous in case of ingestion. May be fatal if swallowed.

Potential Chronic Health Effects	CARCINOGENIC EFFECTS : Classified None. by NIOSH. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available.
Medical Conditions Aggravated by Overexposure:	Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Overexposure /Signs/Symptoms	Not available.
See Toxicological Information (section 11)	

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Ingestion	If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
Notes to Physician	Not available.

Section 5. Fire Fighting Measures

Flammability of the Product	May be combustible at high temperature.
Flash Points	Not available.
Products of Combustion	These products are carbon oxides (CO, CO ₂), nitrogen oxides (NO, NO ₂ ...), halogenated compounds.
Fire Hazards in Presence of Various Substances	Not available.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
Protective Clothing (Fire)	Be sure to use an approved/certified respirator or equivalent.
Special Remarks on Fire Hazards	Not available.
Special Remarks on Explosion Hazards	Not available.

Section 6. Accidental Release Measures

Small Spill and Leak	Use appropriate tools to put the spilled solid in a convenient waste disposal container.
Large Spill and Leak	Poisonous solid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal.

Section 7. Handling and Storage

Handling	Avoid contact with eyes, skin and clothing. Do not ingest. Avoid breathing dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
Storage	Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 20°C (68°F).

Section 8. Exposure Controls, Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
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Personal Protection

Eyes Splash goggles.

Body Lab coat.

Respiratory Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Hands Gloves.

Feet Not applicable.

Protective Clothing (Pictograms)



Personal Protection in Case of a Large Spill Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Product Name	Exposure Limits
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1) Carbamylcholine Chloride	Not available.
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Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Solid. (Crystalline solid.)	Color	White.
Molecular Weight	182.7 g/mole		
Molecular Formula	C ₈ H ₁₅ ClN ₂ O ₂		
Boiling/Condensation Point	Not available.		
Melting/Freezing Point	Decomposition temperature: 210.06°C (410.1°F)		
Specific Gravity	Not available.		
Vapor Pressure	Not applicable.		
Vapor Density	Not available.		
Solubility	Easily soluble in cold water.		

Section 10. Stability and Reactivity

Stability and Reactivity	The product is stable.
Incompatibility with Various Substances	Reactive with oxidizing agents.
Hazardous Decomposition Products	These products are halogenated compounds.
Hazardous Polymerization	Not available.

Section 11. Toxicological Information

RTECS #	GA0875000
Toxicity to Animals	Acute oral toxicity (LD50): 15 mg/kg [Mouse].
Chronic Effects on Humans	CARCINOGENIC EFFECTS : Classified None. by NIOSH. May cause damage to the following organs: heart, gastrointestinal tract, upper respiratory tract.
Other Toxic Effects on Humans	Extremely hazardous in case of skin contact (permeator), of ingestion, . Hazardous in case of skin contact (irritant), of inhalation (lung irritant).
Special Remarks on Toxicity to Animals	Toxic for humans or animal life.
Special Remarks on Chronic Effects on Humans	Not available.
Special Remarks on Other Toxic Effects on Humans	Material is irritating to mucous membranes and upper respiratory tract. Exposure can cause nausea, headache and vomiting. May be fatal.




Section 12. Ecological Information

Ecotoxicity	Not available.
Toxicity of the Products of Biodegradation	The products of degradation are as toxic as the product itself.

Section 13. Disposal Considerations

Waste Information	Waste must be disposed of in accordance with federal, state and local environmental control regulations.
Waste Stream	Not available.
Consult your local or regional authorities.	

Section 14. Transport Information


DOT Classification	CLASS 6.1: Poisonous material.	
	Toxic solid, organic, n.o.s.*, 6.1, UN2811, II	
TDG Classification	CLASS 6.1: Poisonous material. CLASS: 9.2: Environmentally hazardous material.	 
	Toxic solid, organic, n.o.s.*, 6.1, 9.2, UN2811, II	

Marine Pollutant	Not available.	
Special Provisions for Transport	Not available.	
ADR/RID Classification	CLASS 6.1: Toxic substance.	
IMO/IMDG Classification	CLASS 6.1: Toxic substance.	
ICAO/IATA Classification	CLASS 6.1: Toxic substance.	

Section 15. Regulatory Information

HCS Classification	CLASS: Highly toxic. CLASS: Irritating substance. CLASS: Target organ effects.
U.S. Federal Regulations	TSCA 8(b) inventory: Carbachol SARA 302/304/311/312 extremely hazardous substances: Carbachol SARA 302/304 emergency planning and notification: Carbachol SARA 302/304/311/312 hazardous chemicals: Carbachol SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Carbachol: immediate health hazard SARA 313 toxic chemical notification and release reporting: No products were found. Clean Water Act (CWA) 307: No products were found. Clean Water Act (CWA) 311: No products were found. Clean air act (CAA) 112 accidental release prevention: No products were found. Clean air act (CAA) 112 regulated flammable substances: No products were found. Clean air act (CAA) 112 regulated toxic substances: No products were found.
WHMIS (Canada)	CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CEPA NDSL: Carbachol
International Regulations	
EINECS	Not available.
DSCL (EEC)	R26/27/28- Very toxic by inhalation, in contact with skin and if swallowed. R36/37/38- Irritating to eyes, respiratory system and skin.
International Lists	Australia (NICNAS): Carbachol
State Regulations	Pennsylvania RTK: Carbachol: (environmental hazard, generic environmental hazard) Massachusetts RTK: Carbachol New Jersey: Carbachol California prop. 65: No products were found.

Section 16. Other Information

Label Requirements	MAY BE FATAL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE DAMAGE TO THE FOLLOWING ORGANS: HEART, GASTROINTESTINAL TRACT, RESPIRATORY TRACT.														
Hazardous Material Information System (U.S.A.)	<table><tr><td>Health</td><td>*</td><td>4</td></tr><tr><td>Fire Hazard</td><td></td><td>1</td></tr><tr><td>Reactivity</td><td></td><td>0</td></tr><tr><td>Personal Protection</td><td></td><td>E</td></tr></table>	Health	*	4	Fire Hazard		1	Reactivity		0	Personal Protection		E	National Fire Protection Association (U.S.A.)	
Health	*	4													
Fire Hazard		1													
Reactivity		0													
Personal Protection		E													

Notice to Reader

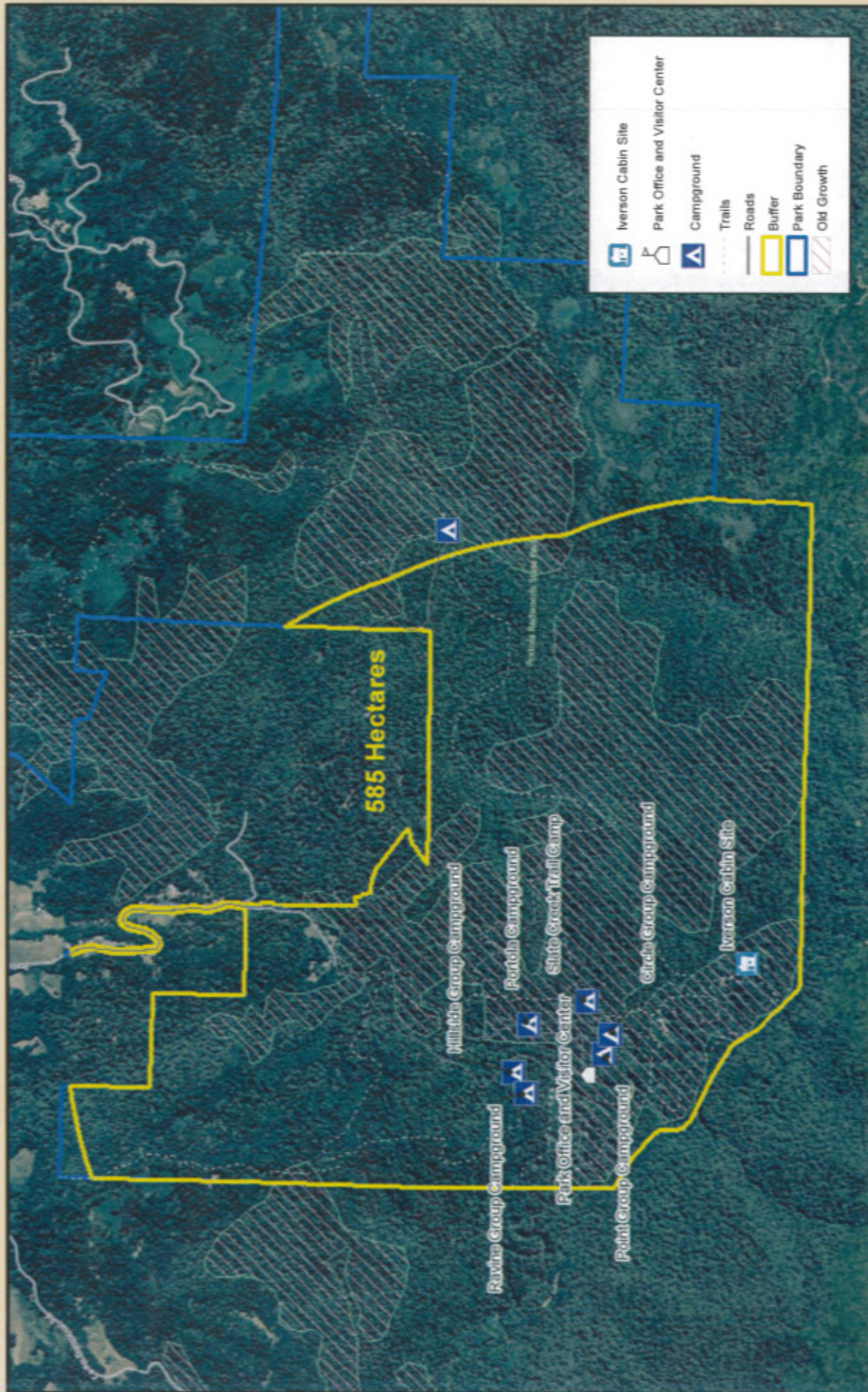
To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Catalog # 212385

Date of issue
10/31/2001.

Page: 6/6

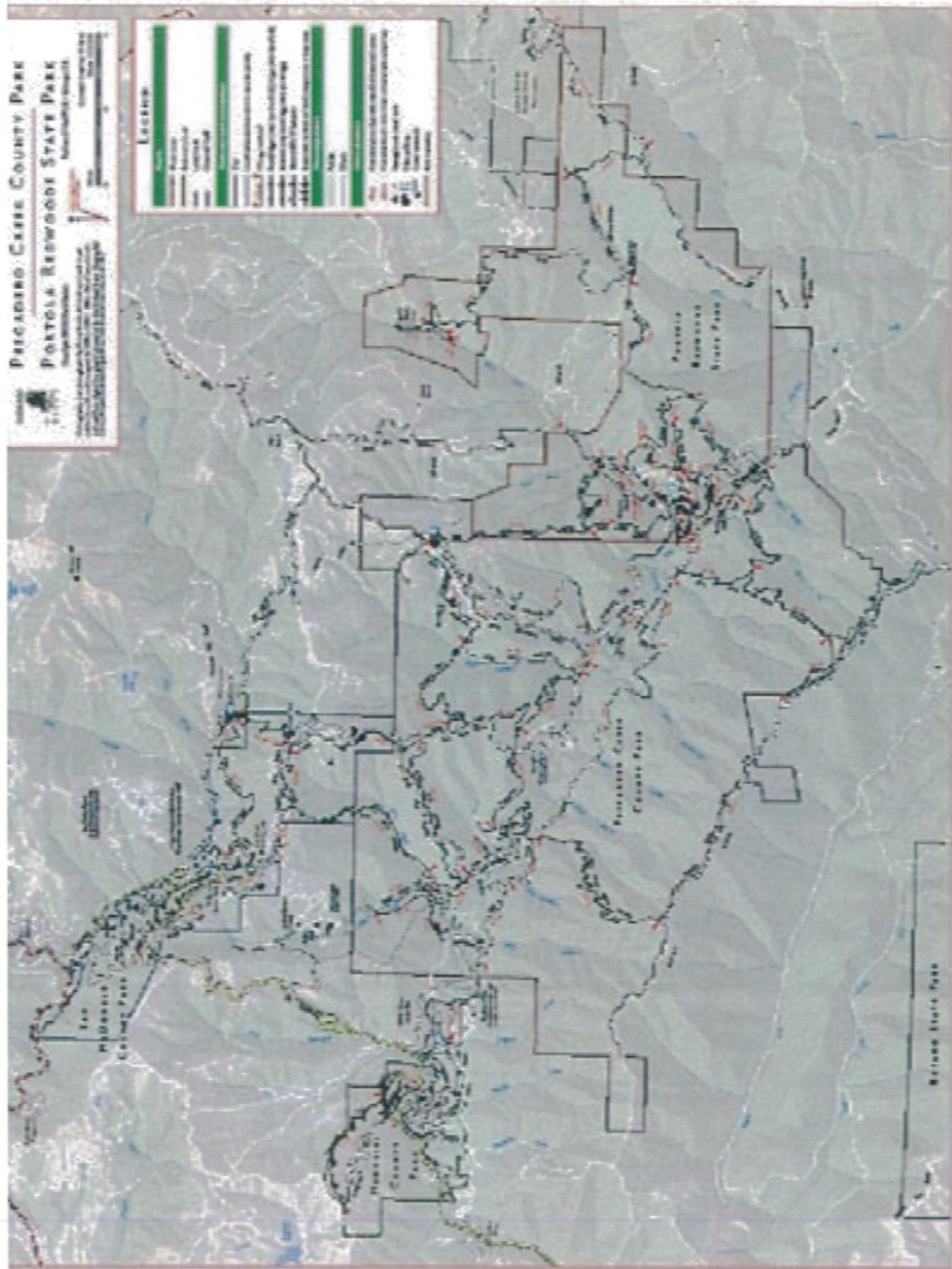


Bad Egg Buffer Analysis Portola Campgrounds



Calif. Dept. of Fish and Game
Office of Spill Prevention and Response

Data Source: CA State Parks, CA DFG, NAD 1983, California, Tule, Mono
Prepared by: Steve Hargison
Author: Isaac O'Brien
Date Created: 20111213



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